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(56) Documents cited

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(54) Branched conduit coupling assembly

(57) A conduit coupling assembly for the conduction and distribution of fluids wherein each conduit (10) comprises an extruded aluminium section having a central longitudinally extending throughbore (11) and channel-shaped grooves (12) on its external surface, which grooves extend longitudinally and are open outwardly, a tubular connector member (13) insertable into the conduits to be coupled and providing a pressure seal therewith, and a connector plate (17) detachably affixable to the conduits to be connected wherein each conduit includes a fluid outlet aperture (21) and wherein a detachably affixable sealing plate (22), having at least one threaded bore (22a) formed therein for the connection of at least one conduit for distribution and use of the fluid, surrounds said outlet aperture (21).

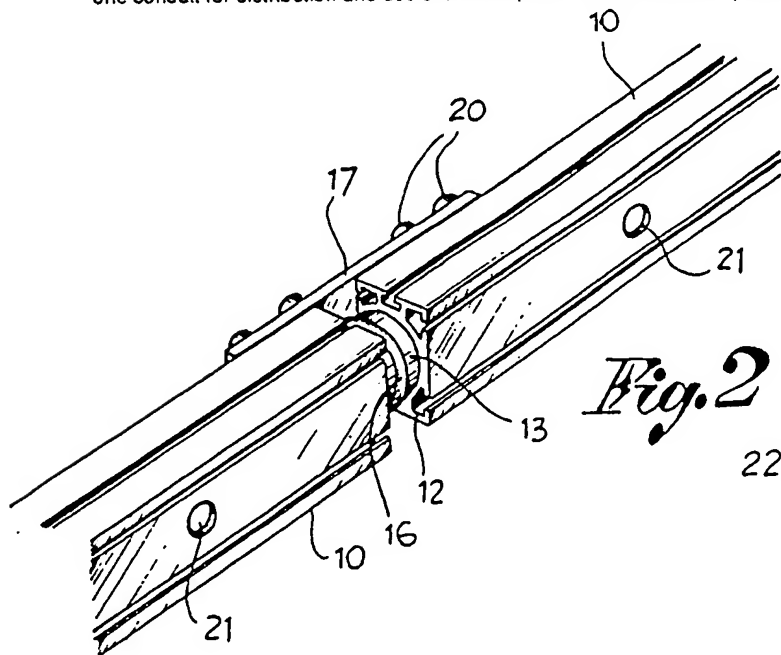


Fig. 2

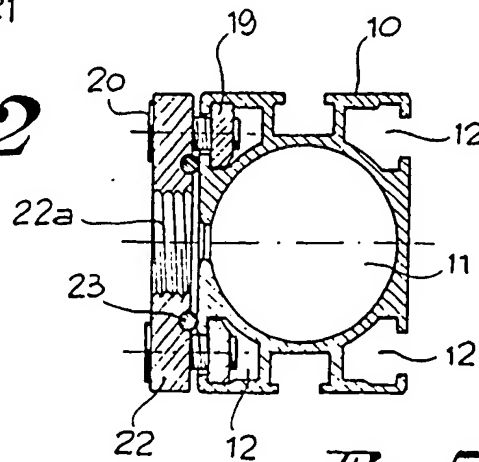
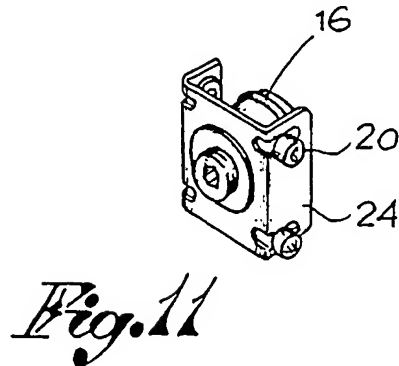
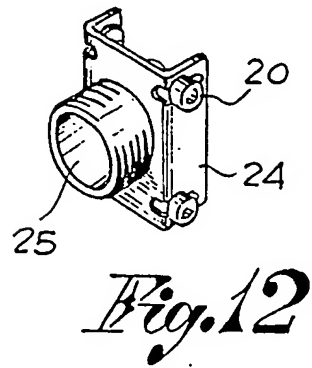
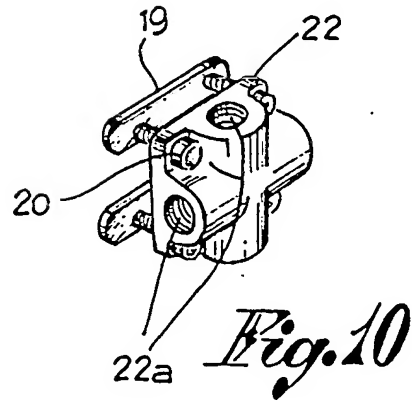
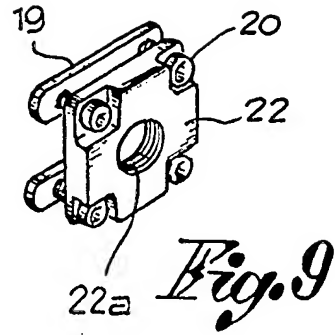
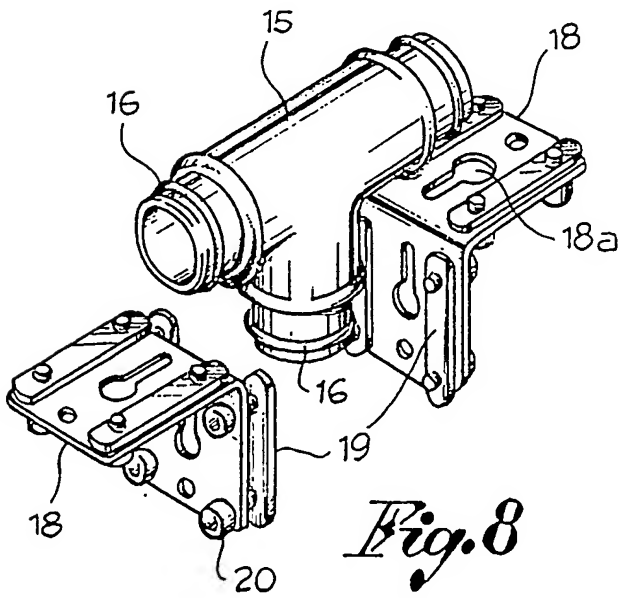
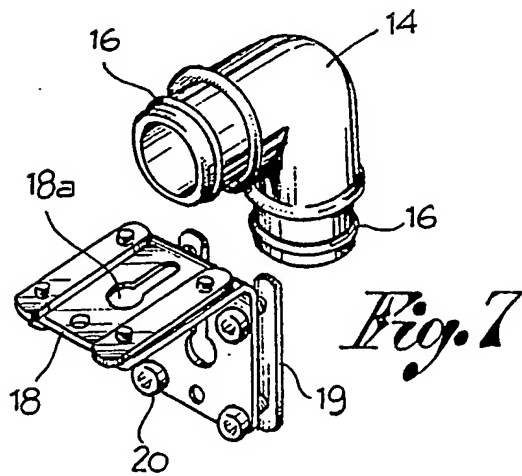
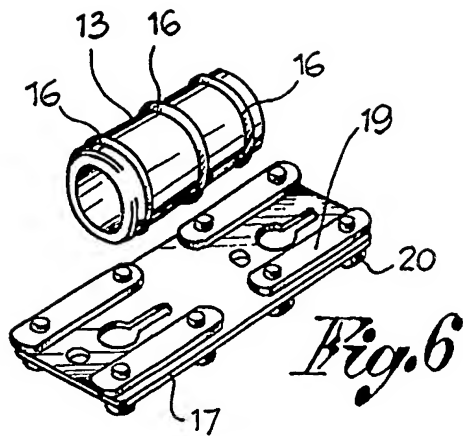


Fig. 5

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"CONDUIT COUPLING ASSEMBLY"

This present application relates to a coupling assembly. More particularly, the present invention relates to a coupling assembly in which conduits for the ducting and distribution of fluids such as compressed air low pressure air and liquids or electrical cables can be interconnected.

The invention seeks to provide a coupling assembly in which hollow conduits can be connected, in a modular manner, to one or more identical conduits in order to produce flow paths along which fluids can be conducted quickly, safely and functionally, whilst maintaining the possibility of expanding the installation, modifying it, adding new outlets and sub-dividing it into various sections at any time and with ease.

Thus, the present invention seeks to provide a coupling assembly in which the conduits can be connected together mechanically with a fluid-tight seal in line, at an angle or to form a T-joint or a cross-over joint, thereby conferring a great variety of configurations upon an installation, while still at all times permitting the disconnection for any one or more conduits for modification and/or expansion of the installation, or for being fitted with fluid offtakes tapping point at any location along the length of any conduit.

According to the present invention, there is provided a conduit coupling assembly for the conduction and distribution of fluids wherein each conduit comprises an extruded aluminium section having a central longitudinally extending throughbore and channel-shaped grooves on its external surface, which grooves extend longitudinally and are open outwardly, a tubular connector

member insertable into the conduits to be coupled and providing a pressure seal therewith, and a connector plate detachably affixable to the conduits to be connected wherein each conduit includes a fluid outlet aperture and wherein a detachably affixable sealing plate, having at least one threaded bore formed therein for the connection of at least one conduit for distribution and use of the fluid, surrounding said outlet aperture.

The invention will be further described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 shows a perspective view of a length of a conduit having a lateral fluid offtake aperture;

Figure 2 shows a view similar to Fig. 1 but of two conduits connected in line;

Figure 3 shows a longitudinal cross-sectional view of the connection between two conduits shown in Figure 2;

Figure 4 shows a transverse cross-sectional view taken along the line IV-IV in Figure 3;

Figure 5 shows a transverse cross-sectional view through the conduit shown in Figure 1 in the region of a lateral fluid offtake aperture;

Figures 6, 7 and 8 show perspective views of other embodiments of connecting members and connecting plates for interconnecting conduits to form particular arrangements;

Figures 9 and 10 show two embodiments of fluid outlet plates; and

Figures 11 and 12 show two embodiments of end pieces for the conduits.

In Figure 1, there is shown a conduit which comprises a rectangular section 10 formed from extruded aluminium. The conduit has a central longitudinal

cylindrical throughbore and, in its corner regions C-shaped channel-like grooves 12. The grooves also extend longitudinally and are open to the exterior. The section may be cut to any length and is then joined to similar sections in line, at an angle, to form a T-shaped or to form a cross to form flow lines for the conduction and distribution of fluid passing through the bore 11 in the conduit.

The connection of the ends of the bars is effected by providing connectors in the form of straight members 13 (Fig. 6), angled members 14 (Fig. 7), T-shaped members 15 (Fig. 8) or any other desired form. The connectors 13, 14 or 15 are fitted into the longitudinal ends of the bore 11 in the conduit 10, as is shown in Figures 3 and 4. The connectors are provided with seals 16 which form a seal within the conduit bores 11 against the ends of the connected conduits 10.

The connectors 13, 14 or 15 thus ensure continuity of the conduction for the fluid, and ensure that a fluid-tight joint is maintained even when the conduits vary in length as a result of, for example, thermal expansion. They also ensure that the conduits can be disassembled from one another. Additionally, the connections between the conduits are also stabilised mechanically, although still detachably, by means of connector plates 17, 18. These plates may be flat, as shown at 17 in Figure 6 or right-angled as shown at 18 in Figures 7 and 8. The desired shape is elected in dependence upon the shape of the connector used and the desired arrangement of the conduits. The connector plates 17, 18 are attached to blocks 19 by means of bolts 20, as is shown in Figures 3 and 4. The blocks 19 are then located in the C-shaped channel-like grooves 12 of adjacent conduits. The attachment is such that the

conduits can be disassembled at any time simply by removing the bolts.

The connector plates, particularly right-angled plates 18, can also be used as means for mounting the conduit system on a fixed support making use of keyhole apertures 18a formed in the plates and suitable bolts.

Lateral apertures 21 which form outlets for the fluid can be formed in each conduit of the arrangement. An outlet plate 22 is provided for each outlet aperture 21 which includes blocks and fixing bolts as shown in Figure 5, which is similar to the plates 17, 18. Each outlet plate 22 has one or more threaded apertures 22a, as shown in Figures 9 and 10, for the connection of fluid delivery conduits thereto and bears at least one seal 23 on its internal surface to provide a seal around the outlet aperture 21 on the external surface of the conduit.

The free ends of the assembled conduits system can be fitted with either a blank end piece 24, such as that shown in Figure 11, or with an end piece having a threaded connection 25, such as that shown in Figure 12. Finally it should be noted that lines formed using the abovementioned conduits can be used for the conduction and distribution of fluids which are both gaseous and liquid and which are subjected to both positive and negative pressure.

CLAIMS

1. A conduit coupling assembly for the conduction and distribution of fluids wherein each conduit comprises an extruded aluminium section having a central longitudinally extending throughbore and channel-shaped grooves on its external surface, which grooves extend longitudinally and are open outwardly, a tubular connector member insertable into the conduits to be coupled and providing a pressure seal therewith, and a connector plate detachably affixable to the conduits to be connected wherein each conduit includes a fluid outlet aperture and wherein a detachably affixable sealing plate, having at least one threaded bore formed therein for the connection of at least one conduit for distribution and use of the fluid, surrounding said outlet aperture.

2. A coupling assembly as claimed in claim 1 wherein the connector member is so shaped as to permit conduits to be connected in straight lines, at angles to one another, to form a T-joint or to form a cross-joint, the connector carrying first and second seal members, the first seal members being inserted into the throughbore in the conduits and the second seal members sealing against the ends of the conduits.

3. A coupling assembly as claimed in claim 1, in which the connector plates are straight or angled and are detachably affixed to block members, which members are inserted in the channel-shaped grooves formed in the conduits which are to be connected.

4. A coupling assembly as claimed in any preceding claim, in which each outlet sealing plate is detachably affixed to block members, which members are insertable into the channel-shaped grooves in the conduit,

at least one seal surrounding an outlet aperture being placed between the plate and the conduit.

5. A coupling assembly as claimed in any preceding claim, in which blank end pieces or end pieces having a threaded connection are fitted into the free ends of connected conduits.

6. A coupling assembly as claimed in any preceding claim, in which the connector plates also form means for mounting the conduits on fixed support means.

7. A coupling assembly as claimed in claim 1 constructed and arranged to operate substantially as hereinbefore described with reference to the accompanying drawings.